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ERICSSON INC. 6300 LEGACY DRIVE M/S EVR C11 PLANO, TX 75024			GANTT, ALAN T	
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			2684	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/556,579

Applicant(s)

ERIKSSON ET AL.

Examiner

Alan T. Gantt

Art Unit

2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-46 is/are rejected.
- 7) ☒ Claim(s) 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 07 April 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No.: _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Response to Arguments***

Applicant's arguments filed 8/23/04 have been fully considered but they are not persuasive.

Regarding claims 1, 20, 33, 40, and 43, Applicant attempts to overcome the rejection by citing page 14, lines 16 - 22 and stating, "The specification therefore, teaches the concept of a first and second amount of noise suppression levels which are optimized. That the individual tuning is done in order to optimize the speech quality and the overall noise suppression level should be obvious to the one in the art". Examiner respectfully disagree that this teaches the concept of "characterized by said overall amount of noise suppression level is obtained by optimizing a linear combination of said first and second amount of noise suppression levels." Note that from Merriam-Webster's Collegiate Dictionary, 10th Edition, the definition of a linear combination" is of "a mathematical entity (as $4x + 5y + 6z$) which is composed of sums and differences of elements (as variables, matrices, or functions) especially when the coefficients are not all zeros" and as claimed, "said overall amount of noise suppression level is obtained by optimizing a linear combination of said first and second amount of noise suppression levels." It is respectfully believed Applicant's cited sections, for example page 14, lines 16 - 22, teach of "... separately adapting the noise suppression for the pre and post NS as a function of noise level and noise spectral characteristics. . ." and thus not therefore optimizing the linear combination (as defined by Merriam Webster's Dictionary 10th Edition) but more so the "... optimized for a given speech encoding/decoding system by separately adapting the noise suppression for the pre and post 'NS . . . "

Art Unit: 2684

It is respectfully believed that such a concept is further supported by Applicant's cited page 17, lines 18 - 23, where, ". . . another user receives the noise-suppressed signal (step 635), processes, e.g. decodes, the signal, and passes control to step 650, in which a second noise suppressor is applied to the received signal and optimized. . . ." It is respectfully believed that, as stated above, an already noise suppressed signal is received and a second noise suppressor is applied and then optimized. This still is reverently not believed to meet the claimed, "overall amount of noise suppression level is obtained by optimizing a linear combination of said first and second amount of noise suppression levels" since the optimization (or perfection) is done separately and not therefore not specifically optimizing a linear combination of said first and second amount of noise suppression levels (which by definition would entail the optimization of a mathematical entity, as an example optimizing the sum of $N_{spre} + N_{spost}$ as a mathematical entity). Hence, Examiner is not persuaded by Applicant's arguments that the claimed, as generally accepted, is specifically taught or recited in the specification..

Claim Objections

Claim 33 is objected to because of the following informalities: misplaced period (" . . . first device."). Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 - 46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1 and 20 the limitations of "[reduced] by an overall amount of noise suppression level, characterized by said overall amount of noise suppression level is obtained by optimizing a linear combination of said first and said second amount of noise suppression levels," were not adequately described in the specification. Applicant describes, "...tuning these algorithms individually for optimizing the perceived speech quality" (page 12, lines 4 -15) and again to optimization with respect to individual stages (page 17, lines 9 -23 and with reference to Figure 6, for example, "...the noise signal is passed to a first noise suppressor which is optimized to suppress acoustic noise. . ."), but not specifically that the overall amount of noise suppression level being obtained by optimizing a linear combination of the first and second amount of noise suppression levels as currently claimed.

Further it was not understood how, without any means of feedback, the presently claimed could be performed, as from the specification one noise suppression device resides in a transmitter and the other in a potentially remote receiver and hence it would be assumed for the claimed to perform the described function, the transmitter would have to have some indications of noise seen by the receiver, since the overall amount of suppression is obtained from optimization of a linear combination of both noise levels.

Regarding claim 33, the limitations of "reducing the noise associated with one of the noise suppressors by an overall amount of noise suppression level, characterized by said overall amount of noise suppression level is obtained by optimizing a linear combination of said first and said second amount of noise suppression levels," were not adequately described in the specification. Applicant describes, "...tuning these algorithms individually for optimizing the perceived speech quality," (page 12, lines 4 -15) and again to optimization with respect to individual stages (page 17, lines 9 -23 and with reference to Figure 6, for example, "...the noise signal is passed to a first noise suppressor which is optimized to suppress acoustic noise. . ."), but not specifically that, "reducing the noise associated with one of the noise suppressors by an overall amount of noise suppression level, characterized by said overall amount of noise suppression level is obtained by optimizing a linear combination of said first and said second amount of noise suppression levels" as currently claimed.

Further it was not understood how, without any means of feedback, the claimed as presented could be performed as from the specification one noise suppression device resides in a transmitter and the other in a potentially remote receiver and hence it would be assumed for the claimed to perform the described function, the transmitter would have to have some indications of noise seen by the receiver, since the overall amount of suppression is obtained from optimization of a linear combination of both noise levels.

Regarding claim 40, the limitations, "whereby the noise associated with said given one of said voice communications is reduced by an overall amount of noise suppression level, wherein said first amount of noise suppression level is obtained by optimizing a linear combination of

Art Unit: 2684

said first and said second amount of noise suppression levels," were not adequately described in the specification. Applicant describes, "...tuning these algorithms individually for optimizing the perceived speech quality" (page 12, lines 4 -15) and again to optimization with respect to individual stages (page 17, lines 9 -23 and with reference to Figure 6, for example, "...the noise signal is passed to a first noise suppressor which is optimized to suppress acoustic noise. . ."), but not specifically that "whereby the noise associated with said given one of said voice communications is reduced by an overall amount of noise suppression level, wherein said first amount of noise suppression level is obtained by optimizing a linear combination of said first and said second amount of noise suppression levels," as currently claimed.

Further it was not understood how, without any means of feedback, the presently claimed could be performed as from the specification one noise suppression device resides in a transmitter and the other in a potentially remote receiver and hence it would be assumed for the claimed to perform the described function, the transmitter would have to have some indications of noise seen by the receiver, since the overall amount of suppression is obtained from optimization of a linear combination of both noise levels.

Regarding claim 43, the limitations, Sfwhereby the noise associated with said given one of said voice communications is reduced by an overall amount of noise suppression level, wherein said second amount of noise suppression level is obtained by optimizing a linear combination of said first and said second amount of noise suppression levels," were not adequately described in the specification. Applicant describes, "...tuning these algorithms individually for optimizing the perceived speech quality," (page 12, lines 4 -15) and again to

Art Unit: 2684

optimization with respect to individual stages (page 17, lines 9 -23 and with reference to Figure 6, for example, "...the noise signal is passed to a first noise suppressor which is optimized to suppress acoustic noise. . ."), but not specifically that "whereby the noise associated with said given one of said voice communications is reduced by an overall amount of noise suppression level, wherein said second amount of noise suppression level is obtained by optimizing a linear combination of said first and said second amount of noise suppression levels," as currently claimed.

Further it was not understood how, without any means of feedback, the presently claimed could be performed as from the specification one noise suppression device resides in a transmitter and the other in a potentially remote receiver and hence it would be assumed for the claimed to perform the described function, the transmitter would have to have some indications of noise seen by the receiver, since the overall amount of suppression is obtained from optimization of a linear combination of both noise levels.

Claims 2 - 19, 20 - 32, 34 -39, 41 - 42, and 44 - 46 are rejected for at least those reasons recited for the independent claims upon which they depend upon (1, 20, 33, 40, and 43, respectively).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2684

Claims 40-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 40, it was not understood what a "coder" was in reference to as the specification does not recite such a term. For purposes of examination it was assumed that this was in reference to the encoder device as per starting page 11, line 22 and ending page 12, line 15. Appropriate correction and clarification are requested.

Claims 41 and 42 are rejected for at least those reasons as recited for independent claim 40.

Regarding claim 43, it was not understood what a "vocoder" was in reference to as the specification does not recite such a term. For purposes of examination it was assumed that this was in reference to the encoder device as per starting page 11, line 22 and ending page 12, line 15. Appropriate correction and clarification are requested.

Regarding claims 44, 45, 46, and 39 it was not understood what "the codec mode" was in reference to as the specification does not recite such a term. For purposes of examination, it was assumed this was in reference to the discussion as per page 15, lines 5 -25 of the specification. Appropriate correction and clarification are requested.

Claims 44 - 46 are rejected for at least those reasons as recited for independent claim 43.

(Please note that below follows the rejections presented from paper number 7, under the

Art Unit: 2684

assumption that Applicant intends to withdraw the new matter stated above)

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 6 - 8, 18, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Ozawa (Ozawa, European Patent Application Number 655,731).

Regarding claim 1, Ozawa teaches of in a telecommunications system having voice communications subject to noise, a distributed noise suppression system for suppressing said noise for a given one of said voice communications (Figures 1 and 3 and page 7, lines 22 -27), said noise suppression system comprising: a first noise suppressor, within a first device, for suppressing noise received by said first device prior to transmission of the noise-suppressed signal to a destination device (Figure 1 and page 3, lines 36 -43 and page 7, lines 22 -27), and a second noise suppressor, within said destination device, for further suppressing the noise-suppressed signal received from said first device to said destination device, whereby the noise associated with said given one of said voice communications is reduced twice (Figure 3 and page 6, lines 33 - 40., and page 7, lines 22 -27).

Regarding claim 6, Ozawa teaches all the claimed limitations as recited in claim 1.

Ozawa further teaches of comprising: an encoder, within said first device and attached to said

Art Unit: 2684

first noise suppressor, for encoding said noise-suppressed signal from said first noise suppressor prior to transmission to said destination device (Figure 1 and page 3, lines 27 - 31).

Regarding claim 7, Ozawa teaches all the claimed limitations as recited in claim 6.

Ozawa further teaches of comprising: a decoder, within said destination device and attached to said second noise suppressor, for decoding said noise-suppressed signal received from said transmitter prior to said second noise suppressor (Figure 3 and page 6, lines 33 - 40).

Regarding claim 8, Ozawa teaches all the claimed limitations as recited in claim 7.

Ozawa further teaches of wherein said noise-suppressed signal received from said transmitter prior to said second suppressor is subject to signal distortion caused by low bit-rate speech encoding by said encoder (page 3, lines 10 - 17), and wherein said second noise suppressor is tuned to suppress said signal distortion (page 6, lines 41 - 50).

Regarding claim 18, Ozawa teaches all the claimed limitations as recited in claim 1.

Ozawa further teaches of wherein said first and second noise suppressors employ respective algorithms therein tuned to the respective noises encountered (Figures 2 and 4 and starting page 43, line 43 and ending page 6, line 33 and starting page 6, line 51 and ending page 7, line 15).

Regarding claim 19, Ozawa teaches all the claimed limitations as recited in claim 18.

Ozawa further teaches of wherein the first and second noise suppression algorithms adapt dynamically to the respective noises encountered (Figures 2 and 4 and starting page 43, line 43

Art Unit: 2684

and ending page 6, line 33 and starting page 6, line 51 and ending page 7, line 15).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2, 4, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) as applied to claim 1 above, and further in view of Romesburg (Romesburg, WIPO No. 97/34290).

Regarding claim 2, Ozawa teaches all the claimed limitations as recited in claim 1. Ozawa does not specifically teach of wherein said first device is a mobile terminal. In a related art dealing with noise suppression, Romesburg teaches of wherein said first device is a mobile terminal (Figure 3 and page 11, lines 15 - 23).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa's noise suppression system, Romesburg's mobile system, for the purposes of added noise suppression in a changing, mobile environment, as taught by Romesburg. Regarding claim 4, Ozawa teaches all the claimed limitations as recited in claim 1.

Ozawa does not specifically teach of wherein said destination device is a mobile telephone.

In a related art dealing with noise suppression, Romesburg teaches of wherein said destination device is a mobile telephone (Figure 3 and page 11, lines 15 - 23).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa's noise suppression system, Romesburg's mobile system, for the purposes of added noise suppression in a changing, mobile environment, as taught by Romesburg.

Regarding claim 15, Ozawa teaches all the claimed limitations as recited in claim 1. Ozawa does not specifically teach of wherein the noise associated with said given one of said voice communications is acoustic.

In a related art dealing with noise suppression, Romesburg teaches of wherein the noise associated with said given one of said voice communications is acoustic (Figure 3 and page 11, lines 15 - 23).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa's noise suppression system, Romesburg's mobile system, for the purposes of added noise suppression in a changing, mobile environment, as taught by Romesburg.

11. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) as applied to claim 1 above, and further in view of Romesburg (Romesburg, WIPO No. 97/34290) and Voit (Voit, US Patent No. 6,075,783).

Regarding claim 3, Ozawa teaches all the claimed limitations as recited in claim 1. Ozawa does not specifically teach of wherein said first device is selected from the group

Art Unit: 2684

consisting of a microphone, terminal, PC, Internet device, and a transmission system.

In a related art dealing with noise suppression, Romesburg teaches of wherein said first device is selected from the group consisting of a microphone, terminal, and a transmission system (Figure 3 and page 11, lines 15 - 23).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa's noise suppression system, Romesburg's mobile system, for the purposes of added noise suppression in a changing, mobile environment, as taught by Romesburg.

Ozawa in view of Romesburg does not specifically teach of a PC and Internet device.

In a related art dealing with the use of mobile communications, Voit teaches of PC and Internet device (Figure 4).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa and Romesburg's noise suppression system, Voit's VOIP system, for the accommodating the use of communicating with a computer terminal via a wireless unit (and vice versa) as taught by Voit.

Regarding claim 5, Ozawa teaches all the claimed limitations as recited in claim 1. Ozawa does not specifically teach of wherein said first device is selected from the group consisting of a microphone, terminal, PC, Internet device, and a transmission system. In a related art dealing with noise suppression, Romesburg teaches of wherein said first device is selected from the group consisting of a loudspeaker, terminal, and a transmission system (Figure 3 and page 11, lines 15 - 23).

It would have been obvious to one skilled in the art at the time of invention to have

Art Unit: 2684

included into Ozawa's noise suppression system, Romesburg's mobile system, for the purposes of added noise suppression in a changing, mobile environment, as taught by Romesburg.

Ozawa in view of Romesburg does not specifically teach of a PC and Internet device.

In a related art dealing with the use of mobile communications, Voit teaches of PC and Internet device (Figure 4).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa and Romesburg's noise suppression system, Voit's VOIP system, for the accommodating the use of communicating with a computer terminal via a wireless unit and vise versa) as taught by Voit.

12. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) as applied to claim 1 above, and further Page 12 in view of Aoki et al. (Aoki, US Patent No. 5,933,506).

Regarding claim 9, Ozawa teaches all the claimed limitations as recited in claim 1. Ozawa does not specifically teach of wherein the noise associated with said given one of said voice communications is reduced by said first suppressor by about 6 to 14 dB.

In a related art dealing with noise reduction, Aoki teaches of wherein the noise associated with said given one of said voice communications is reduced by said first suppressor by about 6 to 14 dB (starting column 7, line 66 and ending column 8, line 3).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa's noise suppression's technique, Aoki's suppression limits, for the purposes of reducing added noise at a specified level, as taught by Aoki.

Regarding claim 10, Ozawa in view of Aoki teaches all the claimed limitations as recited in claim 9. Aoki further teaches of wherein the noise is reduced by said first suppressor by about 8 to 10 dB (starting column 7, line 66 and ending column 8, line 3).

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) and Aoki et al. (Aoki, US Patent No. 5,933,506) as applied to claim 10 above, and further in view of Foulkes et al (Foulkes, US Patent No. 3,560,669).

Regarding claim 11, Ozawa in view of Aoki teaches all the claimed limitations as recited in claim 10. Ozawa in view of Aoki, do not specifically teach of wherein the noise is reduced by said first suppressor by about 8dB (though it should be noted that Aoki teaches of 3 to 10 dB and 8 is in that range).

In a related with echo suppression, Foulkes teaches of wherein the noise is reduced by said first suppressor by about 8 dB (column 11, lines 2 - 5).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa and Aoki's noise suppression's technique, Foulkes suppression limits, for the purposes of suppressing noise by a specified level, as taught by Foulkes.

14. Claims 12 - 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) as applied to claim 1 above, and further in view of Dolby (Dolby, US Patent No. 3,665,345).

Art Unit: 2684

Regarding claim 12, Ozawa teaches all the claimed limitations as recited in claim 1 .

Ozawa does not specifically teach of wherein the noise associated with said given one of said voice communications, after suppression by said first noise suppressor, is further reduced by said second suppressor by about 1 to 10 dB.

In a related art dealing with noise reduction, Dolby teaches of wherein the noise associated with said given one of said voice communications, after suppression by said first noise suppressor, is further reduced by said second suppressor by about 1 to 10 II.B (column 2, lines 67 - 70).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa's noise suppression's technique, Dolby's suppression limits, for the purposes of suppressing noise by a specified level, as taught by Dolby.

Regarding claim 13, Ozawa in view of Dolby teach all the claimed limitations as recited in claim 12. Dolby further teaches of wherein the noise is reduced by said second suppressor by about 2 to 8 dB (column 2, lines 67 - 70).

Regarding claim 14, Ozawa in view of Dolby teach all the claimed limitations as recited in claim 12. Dolby further teaches of wherein the noise is reduced by said second suppressor by about 6 dB (column 2, lines 67 - 70).

15. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) as applied to claim 1 above, and further in view of Suvanen et al. (Suvanen, US Patent No. 6,081,732).

Regarding claim 16, Ozawa teaches all the claimed limitations as recited in claim 1. Ozawa does not teach of wherein the noise associated with said given one of said voice communications, after suppression by said first noise suppressor, is from an encoding of said noise-suppressed signal.

In a related art dealing with echo noise elimination, Suvanen teaches of wherein the noise associated with said given one of said voice communications, after suppression by said first noise suppressor, is from an encoding of said noise-suppressed signal (column 7, lines 44 -46).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa's noise suppression's technique, Suvanen's encoder noise, for the purposes of reducing all sources of noise generated in the audio path, as taught by Suvanen.

16. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) as applied to claim 1 above, and further in view of Ferrer et al. (Ferrer, US Patent No. 6,115,589).

Regarding claim 17, Ozawa teaches all the claimed limitations as recited in claim 1. Ozawa does not specifically teach of wherein the noise associated with said given one of said voice communications, after suppression by said first noise suppressor, is from transmission of said noise-suppressed signal.

In a related art dealing with audio noise suppression, Ferrer teaches of wherein the noise associated with said given one of said voice communications, after suppression by said first noise suppressor, is from transmission of said noise-suppressed signal (column 2, lines 27 - 42).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa's noise suppression's technique, Ferrer's channel added noise, for the purposes of reducing all sources of noise generated in the audio path, as taught by Ferrer.

17. Claims 20 - 23, 30, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) in view of Romesburg (Romesburg, WIPO No. 97/34290).

Regarding claim 20, Ozawa teaches of in a telecommunications system having voice communications subject to noise, suppression means for suppressing said noise for a given one of said voice communications (Figures 1 and 3 and page 7, lines 22 -27), comprising: a first noise suppressor for suppressing noise prior to transmission of the noise-suppressed signal to a destination device (Figure 1 and page 3, lines 36 -43 and page 7, lines 22 -27); and a second noise suppressor for suppressing a received noise-suppressed signal received from a transmitting device having a first noise suppressor therein, whereby the noise associated with said given one of said voice communications is reduced twice (Figure 3 and page 6, lines 33 - 40., and page 7, lines 22 -27).

Ozawa does not specifically teach of a mobile telephone having suppression means or received by said mobile telephone. In a related art dealing with noise suppression, Romesburg teaches of a mobile telephone having suppression means (Figure 3 and page 11, lines 15 - 23) or received by said mobile telephone (Figures 3 and 4 and page 11, lines 15 - 23).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa's noise suppression system, Romesburg's mobile system, for the purposes

Art Unit: 2684

of added noise suppression in a changing, mobile environment, as taught by Romesburg.

Regarding claim 21, Ozawa in view of Romesburg, teach all the claimed limitations as recited in claim 20. Ozawa further teaches of comprising: an encoder, attached to said first noise suppressor, for encoding said noise-suppressed signal from said first noise suppressor prior to transmission to said destination device (Figure 1 and page 3, lines 27 - 31).

Regarding claim 22, Ozawa in view of Romesburg, teach all the claimed limitations as recited in claim 20. Ozawa further teaches of comprising: a decoder, attached to said second noise suppressor, for decoding said received noise-suppressed signal received from said transmitting device prior to said second noise suppressor (Figure 3 and page 6, lines 33 - 40).

Regarding claim 23, Ozawa in view of Romesburg, teach all the claimed limitations as recited in claim 22. Ozawa further teaches of wherein said noise-suppressed signal received from said transmitter prior to said second suppressor is subject to signal distortion caused by low bit-rate speech encoding by said encoder, and wherein said second noise suppressor is tuned to suppress said signal distortion (Figure 3 and page 6, lines 33 - 40).

Regarding claim 30, Ozawa in view of Romesburg, teach all the claimed limitations as recited in claim 20. Romesburg further teaches of wherein the noise associated with said given one of said voice communications is acoustic (Figure 3 and page 11, lines 15 - 23).

Art Unit: 2684

Regarding claim 33, Ozawa teaches of in a telecommunications system having voice communications subject to noise, a method for suppressing said noise for a given one of said voice communications (Figures 1 and 3 and page 7, lines 22 -27), said method comprising the steps of noise suppressing, by a first noise suppressor, noise received by a first device prior to transmission of the noise-suppressed signal to a destination device (Figure 1 and page 3, lines 36 -43 and page 7, lines 22 -27); and further noise suppressing, by a second noise suppressor within said destination device, said noise-suppressed signal received from said first device (Figure 3 and page 6, lines 33 - 40; and page 7, lines 22 -27). Ozawa does not specifically teach of acoustic noise.

In a related art dealing with noise suppression, Romesburg teaches of acoustic noise (Figure 3 and page 11, lines 15 - 23).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa's noise suppression system, Romesburg's mobile system, for the purposes of added noise suppression in a changing, mobile environment, as taught by Romesburg.

18. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) and Romesburg (Romesburg, WIPO No. 97/34290) as applied to claim 20 above, and further in view of Aoki et al. (Aoki, US Patent No. 5,933,506).

Regarding claim 24, Ozawa in view of Romesburg, teach all the claimed limitations as recited in claim 20. Ozawa, in view of Romesburg do not specifically teach of wherein the noise associated with said given one of said voice communications is reduced by said first suppressor

Art Unit: 2684

by about 6 to 14 dB.

In a related art dealing with noise reduction, Aoki teaches of wherein the noise associated with said given one of said voice communications is reduced by said first suppressor by about 6 to 14 dB (starting column 7, line 66 and ending column 8, line 3).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa and Romesburg's noise suppression's technique, Aoki's suppression limits, for the purposes of reducing added noise at a specified level, as taught by Aoki.

Regarding claim 25, Ozawa in view of Romesburg and Aoki, teach all the claimed limitations as recited in claim 24. Aoki further teaches of wherein the noise is reduced by said first suppressor by about 8 to 10 dB (starting column 7, line 66 and ending column 8, line 3).

19. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) and in view of Romesburg (Romesburg, WIPO No. 97/34290) and Aoki et al. (Aoki, US Patent No. 5,933,506) as applied to claim 25 above, and further in view of Foulkes et al (Foulkes, US Patent No. 3,560,669).

Regarding claim 26, Ozawa in View of Romesburg and Aoki teach all the claimed limitations as recited in claim 25. Ozawa and Romesburg in View of Aoki, do not specifically teach of wherein the noise is reduced by said first suppressor by about 8 dB (though it should be noted that Aoki teaches of 3 to 10 dB and 8 is in that range).

In a related with echo suppression, Foulkes teaches of wherein the noise is reduced by

Art Unit: 2684

said first suppressor by about 8 dB (column 11, lines 2 - 5).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa, Romesburg, and Aoki's noise suppression's technique, Foulkes suppression limits, for the purposes of suppressing noise by a specified level, as taught by Foulkes.

20. Claims 27 - 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) and Romesburg (Romesburg, WIPO No. 97/34290) as applied to claim 20 above, and further in view of Dolby (Dolby, US Patent No. 3,665,345).

Regarding claim 27, Ozawa in view of Romesburg teach all the claimed limitations as recited in claim 20. Ozawa and Romesburg do not specifically teach of wherein the noise associated with said given one of said voice communications, after suppression by said first noise suppressor, is further reduced by said second suppressor by about 1 to 10 dB.

In a related art dealing with noise reduction, Dolby teaches of wherein the noise associated with said given one of said voice communications, after suppression by said first noise suppressor, is further reduced by said second suppressor by about 1 to 10 dB (column 2, lines 67 - 70).

It would have been obvious to one skilled in the art at the time of invention to have included in Ozawa and Romesburg's noise suppression's technique, Dolby's suppression limits, for the purposes of suppressing noise by a specified level, as taught by Dolby.

Regarding claim 28, Ozawa in view of Romesburg and Dolby, teach all the claimed

Art Unit: 2684

limitations as recited in claim 27. Dolby further teaches of wherein the noise is reduced by said second suppressor by about 2 to 8 dB (column 2, lines 67 - 70).

Regarding claim 29, Ozawa in view of Romesburg and Dolby, teach all the claimed limitations as recited in claim 28. Dolby further teaches of wherein the noise is reduced by said second suppressor by about 6 dB (column 2, lines 67 - 70).

21. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) and Romesburg (Romesburg, WIPO No. 97/34290) a.s applied to claim 20 above, and further in view of Suvanen et al. (Suvanen, US Patent No. 6,081,732).

Regarding claim 31, Ozawa and Romesburg teach all the claimed limitations as recited in claim 20. Ozawa and Romesburg do not teach of wherein the noise associated with said given one of said voice communications, after suppression by said first noise suppressor, is from an encoding of said noise-suppressed signal.

In a related art dealing with echo noise elimination, Suvanen teaches of wherein the noise associated with said given one of said voice commnications, after suppression by said first noise suppressor, is from an encoding of said noise-suppressed signal (column 7, lines 44 -46).

It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa and Romesburg's noise suppression's technique, Suvanen's encoder noise, for the purposes of reducing all sources of noise generated in the audio path, as taught by Suvanen.

22. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (Ozawa, European Patent Application Number 655,731) and Romesburg (Romesburg, WIPO No. 97/34290) as applied to claim 20 above, and further in view of Ferrer et al. (Ferrer, US Patent No. 6,115,589).

Regarding claim 32, Ozawa and Romesburg teach all the claimed limitations as recited in claim 20. Ozawa does not specifically teach of wherein the noise associated with said given one of said voice communications, after suppression by said first noise suppressor, is from transmission of said noise-suppressed signal.

In a related art dealing with audio noise suppression, Ferrer teaches of wherein the noise associated with said given one of said voice communications, after suppression by said first noise suppressor, is from transmission of said noise-suppressed signal (column 2, lines 27 - 42). It would have been obvious to one skilled in the art at the time of invention to have included into Ozawa and Romesburg's noise suppression's technique, Ferrer's channel added noise, for the purposes of reducing all sources of noise generated in the audio path, as taught by Ferrer.

Conclusion

Any inquiry concerning this communication from the examiner should be addressed to Alan Gantt at telephone number (703) 305-0077. The examiner can normally be reached

Art Unit: 2684

between 9:30 AM and 6 PM within the Eastern Time Zone. The group FAX number is (703) 872-9306.

Any inquiry of a general nature or relating to this application should be directed to the group receptionist at telephone number (703) 305-4700.

Alan T. Gantt

Alan T. Gantt

February 23, 2004

Nick Corsaro
**NICK CORSARO
PRIMARY EXAMINER**